Property Commute

Reporting Category Patterns, Function, and Algebra
Topic Exploring properties

Materials

- Balance scale
- Two-colored counters
- Equation Mat (attached)
- Commutative Property for Addition Recording Sheet (attached)

Vocabulary

addend, sum, array, factor, product , identity property, commutative property, equal

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Have students explain the meaning of the equal sign. Then, display a balance scale, and ask how a balance scale can be used to demonstrate the meaning of the equal sign. Place a stack of 3 counters and then a stack of 5 more counters in one pan, and have students describe what the balance looks like. Point out that because the two pans are not balanced, they are *not equal* in weight. Ask what will happen when you place 5 counters and then 3 more counters in the other pan. Will the scale be balanced? (Yes) Place the counters, and point out that the two pans are balanced—that is, they are *equal* in weight. Explain that this is true because all the counters weigh the same; it does not matter where they are placed. Ask students to explain exactly what this demonstration illustrates. (The commutative property for addition—the weight of 3 + 5 counters is *equal* to the weight of 5 + 3 counters, or 3 + 5 = 5 + 3.)
2. Distribute two-color counters and copies of the Equation Mat, and explain to students that they are going to focus on the commutative property for addition. Demonstrate placing 5 red counters and 3 yellow counters on one side of the mat, and direct students to copy this placement on their mats. Then, demonstrate placing an arrangement of 3 yellow counters and 5 red counters on the other side of the mat, and have students copy this placement. Ask students whether the equation mat is now balanced in a way that is similar to the balance scale. (Yes) Ask students to describe the difference between the two sides of the equation. (Only the arrangement or *orders* of the numbers are different.) Have students write an equation to match the models built with the counters. (5 + 3 = 3 + 5).
3. Give students real-world examples of commuting. Explain that traveling from home to school and then from school to home again is called a *commute* because the distance

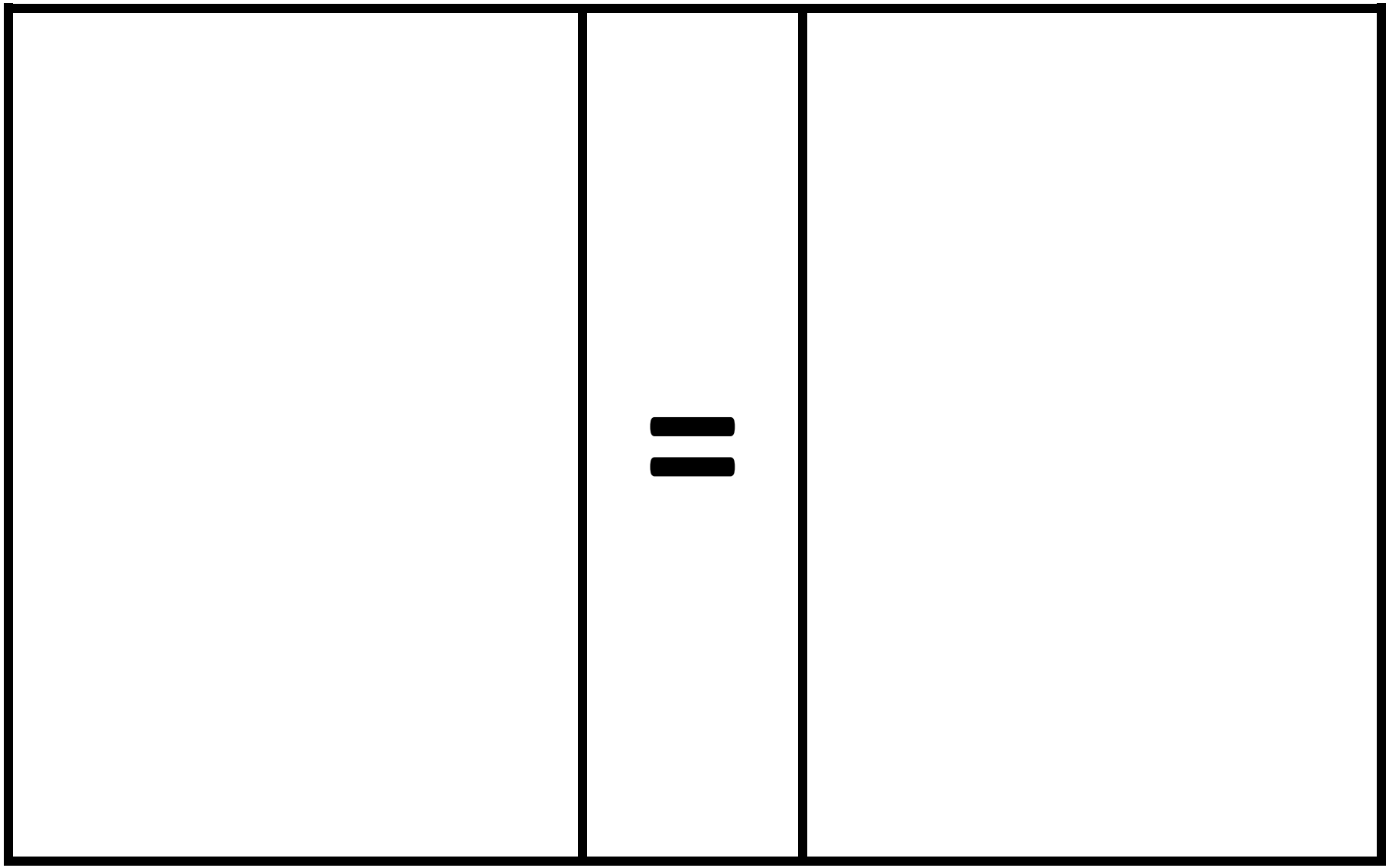
traveled from home to school is equal to the distance from school to home. Emphasize that it is the *direction* that is different, not the value of the distance.

4. Explain to students that they will be working in pairs to create models of the commutative property for addition, draw pictures of the models, and write the equations that are represented by their models. Give each student a copy of the Commutative Property for Addition Recording Sheet. Have partners use their two-color counters and equation mats to build models. Instruct each student to draw each model built and write the equation that is represented by each model on his/her recording sheet. When they are finished, have partners share some of their examples with the class.

Assessment

- **Questions**
  - What is an example of the commutative property for addition? Why is it an example?
  - Is 2 + 3 = 4 + 1 an example of the commutative property for addition? Why, or why not?
  - Is 4 + 2 + 3 = 2 + 3 + 4 an example of the commutative property for addition? Why, or why not?
- **Journal/Writing Prompts**
  - Draw a model for the commutative property for addition.
  - You see one yellow car and two red cars parked on the side of a street. Explain how to use this as an example for the commutative property for addition.

Equation Mat



Commutative Property for Addition Recording Sheet

Model for the Commutative Property	Equation for the Property